

CLAIMS

We claim:

1. A system for processing financial transactions comprising:

a database including related data concerning transaction message formats,  
5 wherein said database includes stored information concerning transformation of  
messages between a standardized internal message format and a plurality of  
external message formats; and

a computer in operative connection with the database, wherein the computer  
includes a message gateway router software function (MGR), wherein said  
MGR is operative to determine a format of a received message having one of  
either the internal format or an external format, and to transform the message  
to the other of said formats.

2. The system according to claim 1 and further comprising a second plurality of  
external devices, wherein each external device is in operative connection with the computer  
15 and communicates with the computer through messages in one of the external formats, and  
wherein the database further includes data representative of each external device and an  
external format used to communicate with the device, and wherein the MGR is operative

responsive to the stored data to convert a message received from the device from the external format associated with the device to the internal format, and to convert a message to the device from the internal format to the external format.

3. The system according to claim 2 wherein the database includes data representative of an identity for each device, wherein the identity data is stored in correlated relation with the external format data, and wherein the MGR is operative to transform the message responsive to the identity data associated with a device sending or receiving the message.

4. The system according to claim 2 wherein the database includes data representative of message types for each of the internal and external formats, and wherein the MGR is operative to transform the message responsive to the message type data associated with the message.

15 5. The system according to claim 2 wherein said database includes data representative of offset and length information for each of said internal and external formats, and wherein said offset and length information defines a location of data representative of a message type in each of said formats, and wherein the MGR is operative to transform the message responsive to the data representative of the message type.

6. The system according to claim 4 wherein the database includes data representative of a message identifier value, wherein each message identifier value is associated with one

message format and one message type, and wherein the MGR is operative to transform the message responsive to the message identifier value associated with the message.

7. The system according to claim 6 wherein the message is comprised of fields, and wherein the database includes data representative of message field positions associated with each message identifier value, and wherein the MGR is operative to transform the message responsive to the message identifier value and the field position data associated with the message.

8. The system according to claim 6 wherein the message is comprised of fields, and wherein the database includes data representative of message field conversions associated with each message identifier value, and wherein the MGR is operative to transform the message responsive to the message identifier value and the field conversion data associated with the message.

9. The system according to claim 2 and further comprising a driver in operative connection with the computer and an external device, and wherein when the device generates a message the driver is operative to include in the message a first message direction indicator, wherein the MGR is operative responsive to the first message direction indicator in the message to convert the message from the external format associated with the device, to the internal format.

10. The system according to claim 2 wherein the database includes data  
representative of an identity for each device, and wherein the system further comprises a  
driver in operative connection with the computer and an external device, and wherein when  
the device generates a message the driver is operative to include in the message a first  
5 message direction indicator and data representative of the identity of the device, wherein the  
MGR is operative responsive to the first direction indicator and the device identity data to  
convert the message from the external format associated with the device to the internal  
format.

11. The system according to claim 2 wherein the computer is in operative connection  
10 with message processing software, and wherein the message processing software is operative  
when the message is being sent to a device to include in the message a second message  
direction indicator, and wherein the MGR is operative responsive to the second direction  
indicator in the message to convert the message from the internal format to the external format  
5 associated with the device.

15 12. The system according to claim 2 wherein the database further includes data  
representative of identities of a third plurality of nodes, wherein each device, MGR, and each  
of a fourth plurality of software functions correspond to a node, and wherein the database  
includes in correlated relation with a node identity, a parent node identity, and wherein the  
computer is operative to send the message from the MGR to a system component

corresponding to a node responsive to a parent node identity stored in correlated relation with an identity of the node.

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13. The system according to claim 12 wherein the message includes data representative of a node identity, and wherein the computer is operative to send the message to the system component corresponding to the node identity.

14. The system according to claim 2 and further comprising a timer in operative connection with the computer, and wherein when the computer sends a message to an external device the computer is further operative to send a timing message to the timer, and wherein the timer is operative to send a timing response message a time after receipt of the timing message.

15. The system according to claim 14 wherein when the device sends a device response message responsive to the device message within the time, the computer is operative to send a timing delete message to the timer, wherein receipt of the timing delete message is operative to cause the timer not to send the timing response message.

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16. The system according to claim 14 wherein the system further includes a message processing program software function (MPP) and wherein the MPP is operative to send the timing message to the timer and to receive the timing response message.

17. The system according to claim 1 and further comprising in operative connection with the computer a message processing program software function (MPP), wherein the MPP processes the received message in the internal format, and wherein the MGR is operative to determine a message type associated with the received message, and is further operative 5 responsive to the message type to route the message to the MPP.

18. The system according to claim 1 wherein the internal format includes an ISO 8583 message format portion.

19. The system according to claim 17 wherein the message in the internal format includes an ISO 8583 message format portion, and wherein the MPP is operative to parse the ISO 8583 message portion into a plurality of cells in an array, each cell containing data from a field of the ISO 8583 message portion.

20. The system according to claim 17 wherein the database further comprises a plurality of state flow tables and related parameter tables, and wherein the computer is operative to execute a plurality of functions, wherein said functions operate on said 15 parameters determined from said parameter tables and deliver a true or false result.

21. The system according to claim 20 wherein said MPP is operative to perform the functions determined from said state flow tables.

22. A method for processing financial transactions generated by a plurality of external devices, each of said external devices communicating messages in a different external message format, said processing conducted in a computer in operative connection with a data store comprising the steps of:

5 storing in a data store data representative of an address uniquely associated  
with each external device and an external message format for each said device,  
which format is stored in correlated relation with said address;

storing in the data store data representative of each external message format in correlated relation with data representative of a location of a message type in a message in said external message format;

storing in the data store data representative of each external message format and message type in correlated relation with data representative of a transformation of an external message having said message format and message type, wherein said transformation is operative to produce an internal format message;

receiving with said computer a device message from an external device having an address, said device message having an external device message format and device message type;

determining the external message format of said device message from said data stored in the data store responsive to said device address;

determining the message type for said device message from said data in the data store responsive to the external device message format and the device message;

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generating an internal message format message corresponding to the device message responsive to the data stored in the data store, the device message format and the device message type.

23. Computer readable media bearing instructions which are operative to cause a computer to carry out the method steps recited in claim 22.

24. A method for processing financial transactions generated by a plurality of devices, each of said devices communicating messages in a different external message format, said processing conducted in a computer in operative connection with a data store, comprising the steps of:

15 storing in the data store data representative of each of the devices operatively connected to provide messages to the system, and storing for each of said

devices data representative of an external message format in which each said device communicates its messages;

storing in the data store data representative of how to convert messages in each said external message format to a message in an internal message format;

5       storing in the data store data representative of how to process transactions in the internal message formats;

receiving device messages with said computer from said devices, said device messages in said external message formats;

transforming said external format messages from said devices to internal format messages with the computer responsive to the data stored in the data store; and

processing with the computer the internal format messages responsive to data stored in the data store.

25. Computer readable indicia bearing instructions thereon which are operative to  
15       cause a computer to carry out the method steps recited in claim 24.

26. A method for processing financial transactions in a system including external devices, at least one computer in operative connection with the external devices, and at least one data store in operative connection with the computer, wherein each external device communicates with the computer through electronic messages, the messages having different message formats, comprising the steps of:

storing in a data store data representative of:

a transformation of each of a first plurality of messages between an external message format and an internal message format;

an identity of each of a second plurality of external devices; and

for each device identity, an external message format for messages communicated to and from the device;

determining with the computer responsive to the information in the data store an identity of an external device generating or receiving a message;

transforming the message with the computer responsive to the format and transformation data in the data store corresponding to the device identity, wherein when the message is a first type which the device generates the

message is transformed from an external format indicated in the data store as associated with the device to the internal format, and wherein when the message is a second type which the device receives the message is transformed from the internal format to the external format.

5 27. The method according to claim 26 wherein in the storing step the data representative of transformation includes data representative of a third plurality of message types for each message communicated in each of the external formats, and wherein the transforming step includes determining with the computer responsive to the message type information in the data store, a message type of the message wherein in the transforming step the message is transformed responsive to the message type.

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28. The method according to claim 27 wherein in the storing step the data representative of transformation includes data representative of a message type location in each of the external format messages, and wherein determining the message type in the message transformation step includes determining with the computer responsive to the information in the data store the message type location in the message, and reading the information at the location in the message.

29. The method according to claim 27 wherein in the storing step the data representative of transformation includes data representative of a fourth plurality of internal message identifiers, each internal message identifier corresponding to a message having one

internal or external message format and message type, and wherein the transforming step includes determining with the computer responsive to the data in the data store an internal message identifier for the message.

30. The method according to claim 26 wherein the method comprises a plurality of fields each field including message data, and wherein in the data storing step the transformation data includes data representative of positions of each of the fields in the message, and wherein the transformation steps includes repositioning message data from the fields in the message.

31. The method according to claim 30 wherein in the data storing step the transformation data further includes data representative of conversions of message data from a first form to a second form, and wherein the transformation step includes converting message data in at least one field of the message from the first form to the second form.

32. The method according to claim 27 wherein the message includes a plurality of fields, and each field includes message data, and wherein in the storing step the transformation data includes data representative of positions of each of the fields in the one message associated with an internal message identifier, and wherein the transformation step includes repositioning the message data from the fields of a message responsive to the position data corresponding to the internal message identifier associated with the message.

33. The method according to claim 32 wherein in the data storing step the transformation data includes data representative of conversion of message data from a first form to a second form in the one message having the internal message identifier, and wherein the transformation step includes converting message data from the fields of the message responsive to the conversion data corresponding to the internal message identifier associated with the message.

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34. The method according to claim 26 and prior to the transforming step further comprising the step of including in the message a designator, wherein a first designator is added to the message when the message is the first type, and wherein a second designator is added to the message when the message is the second type, and wherein in the transformation step the transformation is accomplished responsive to the designator included in the message.

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35. Computer readable media including instructions which are operative to cause a computer to carry out the method steps recited in claim 26.

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36. A system for processing financial transactions comprising:

a computer in operative connection with a database means for storing data representative of information for transforming messages between an internal message format and a plurality of external message formats;

a transforming means for transforming messages between the external formats and the internal formats responsive to the information stored in the database means;

a plurality of external devices, each said external device operative to send and receive messages; and

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processing means operating in the computer, wherein the processing means is operative to send and receive messages in the internal format, and wherein the processing means is operative to communicate with the external devices by passing messages through the transforming means.

37. The system according to claim 36 and further comprising a timing means for timing an elapsed time since a message was transmitted without a response, and wherein the timing means is operative to send a timing response message when the time has passed without the response being received.